

Direct Operated Proportional Relief Valve (with inductive position transducer)

Model: DBETR...1XJ



- ◆ Size 6
- ◆ Maximum working pressure 350 bar
- ◆ Maximum working flow 3 L/min

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Features

- Low hysteresis
- Good repeatability
- Electrical closed loop position control of spring pre-tension
- Both valves and proportional amplifiers from the same supplier

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Function description, sectional drawing

The DBETR proportional relief valve is a remote control valve and direct operated pressure relief valve of poppet design. The valve adjusts the pressure in proportion to the electrical command value.

The valve consists of the valve body (1), proportional solenoid (2) with inductive positional transducer (3), valve seat (4) and valve poppet (5). The pressure is set by adjusting the command value potentiometer (0 to 9 V). Adjusting the command value causes tensioning of the compression spring (6) via controlling the electronic element and the proportional solenoid (2). Tensioning of the compression spring (6), i.e. the position of the spring plate (7) is measured by the inductive positional transducer (3). The deviations from the command value are corrected by the closed loop positional control. The use of this principle eliminates the effect of solenoid friction.

Advantages:

- Low hysteresis
- Good repeatability

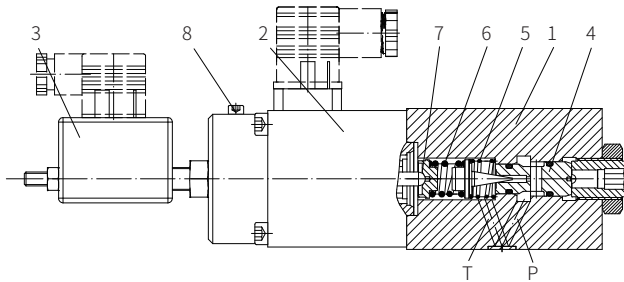
When the command value of the proportional solenoid is zero or power failure or the cable breakage at the positional transducer, it must be adjusted to the minimum settable pressure.

Note!

In order to ensure optimum valve function of the valve, it should be bled when valve used:

- Remove item 8
- Fill the oil into the open screw hole at item 8
- Re-screw the item 8 when no more bubbles appear
- It must be avoid the emptying running of tank.

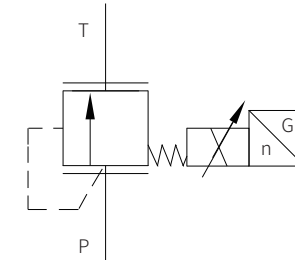
In some installation conditions, a back pressure valve is to be installed (back pressure approx. 2 bar).



Models and specifications

DBETR	1X	J	G24	K4	*
proportional relief valve					more information in text
10 to 19 series (10 to 19 series installation and connection size unchanged)	=1X				sealing material No code= NBR seals V= FKM seals (consult for other seals)
Rekith		=J			
pressure stage: up to 30 bar			=30		
up to 80 bar			=80		
up to 180 bar			=180		
up to 230 bar			=230		
up to 315 bar			=315		
up to 350 bar			=350		
Control electronics supply voltage 24V DC			=G24		
				K4=	square socket without plug

Functional symbols



Technical parameters

Electrical (solenoid)					
Supply voltage	V	24 DC			
Maximum power consumption	VA	50			
Coil resistance	Cold value at 20 °C	Ω	10		
		Maximum warm value	Ω	13.9	
Duty	%	100			
Electrical connections	With component plug to DIN EN 175301-803				
	Plug-in connector to DIN EN 175301-803				
Protection to EN 60529	IP65 with mounted and fixed plug-in connector				
Electrical (inductive position transducer)					
Coil resistance	Total resistance of the coils at 20°C	Ω	1 and 2	2 and 1/2	1/2 and 1
			31.5	45.5	31.5
Electrical connections	With component plug				
	Plug-in connector with flat seal				
Inductivity	mH	6 to 8			
Oscillator frequency	KHz	2.5			
Protection to EN 60529	IP65 with mounted and fixed plug-in connector				

Technical parameters

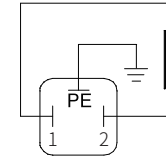
Overview			
Weight	Kg	4.0	
Installation position	Preferably horizontal		
Storage temperature range	°C	-20 to +80	
Environment temperature range	°C	-20 to +50	
Hydraulic (measured when using HLP46, t = 40°C ± 5°C)			
Working pressure	Port P	bar	Up to 350
	Port T, with pressure control	bar	Up to 2
	Without pressure control, Port T	bar	Up to 100
Maximum settable pressure	Pressure stage 30	bar	30
	Pressure stage 80	bar	80
	Pressure stage 180	bar	180
	Pressure stage 230	bar	230
	Pressure stage 315	bar	315
	Pressure stage 350	bar	350
Minimum settable pressure	(See $p_{min}-q_v$ -characteristic curves)		
Maximum flow	Pressure stage 30	L/min	3
	Pressure stage 80	L/min	3
	Pressure stage 180	L/min	3
	Pressure stage 230	L/min	3
	Pressure stage 315	L/min	2
	Pressure stage 350	L/min	2
Fluid	Mineral oil (HL, HLP) ¹⁾ in accordance with DIN 51524; Fast living organisms degraded oil according to VDMA 24568; HETG (Rapeseed oil) ¹⁾ ; HEPG (Polyethyleneglycol) ²⁾ ; HEES (Synthetic Fats) ²⁾		
Fluid temperature range	°C	-20 to +80	
The maximum allowable pollution degree of the oil according to ISO 4406 (c)	Class 20/18/15 ¹⁾		
Viscosity range	mm ² /s	15 to 380	
Hysteresis	%	< 1 of max. settable pressure	
Repeatability	%	< 0.5 of max. settable pressure	
Linearity	%	< 1.5 of max. settable pressure	
Typical variation	%	± 3 of max. settable pressure	
Stepped response $T_u + T_g$ (0 to 100 %), dependent on the system	Pressure stage 30, 80, 180	$P_{min} - P_{max}$	100
		$P_{max} - P_{min}$	50
	Pressure stage 230, 315, 350	150	100

The oil must meet the cleanliness degree requested by the components in the hydraulic system. Effective oil filtration can prevent failure and increase the service life of the components

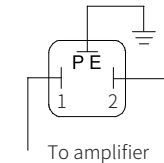
Electrical connections

Proportional solenoid

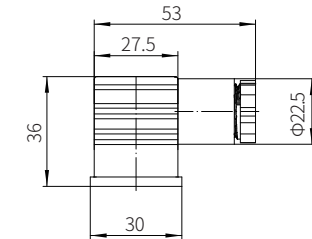
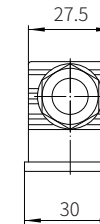
Connection at component plug



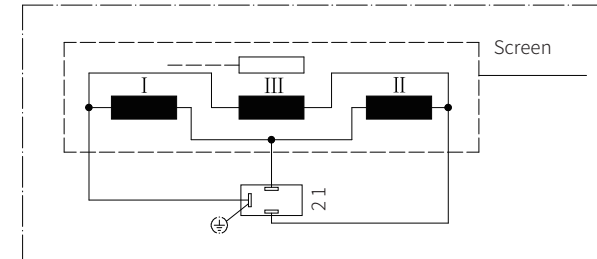
Connection at plug-in connector



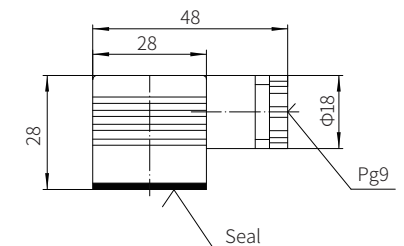
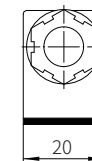
Plug-in connector



Inductive position transducer

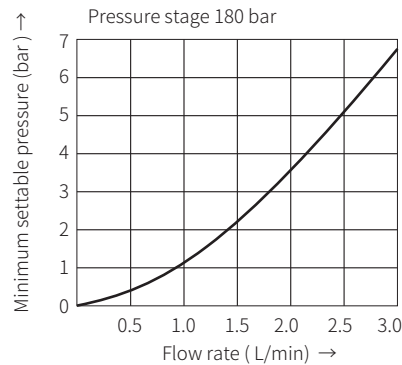
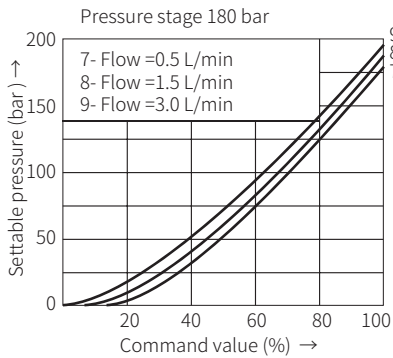
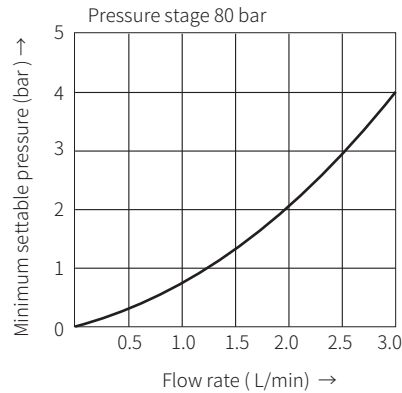
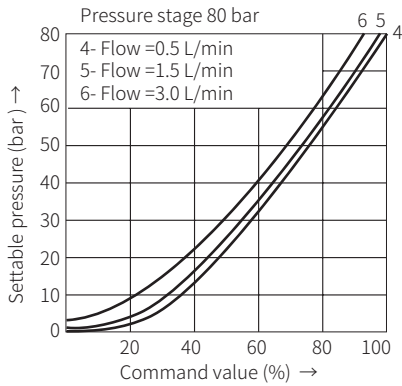
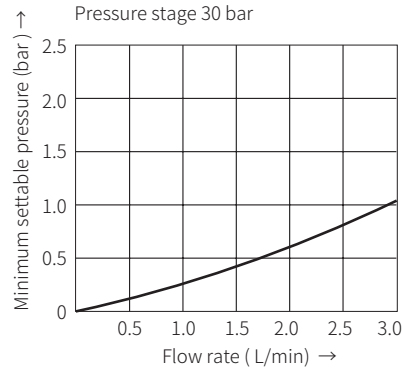
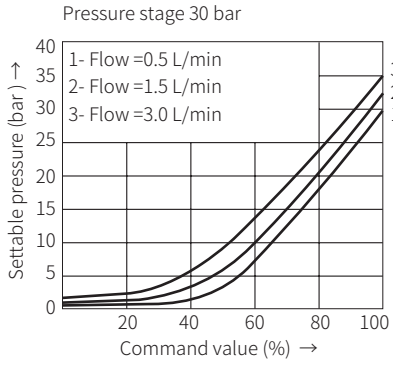


Plug-in connector with flat seal



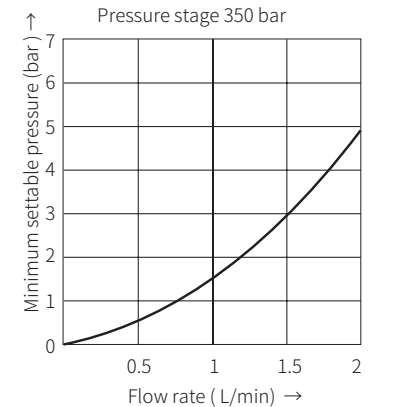
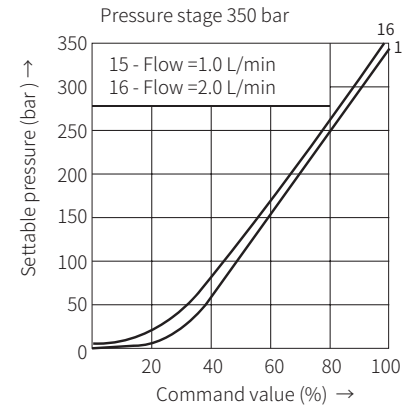
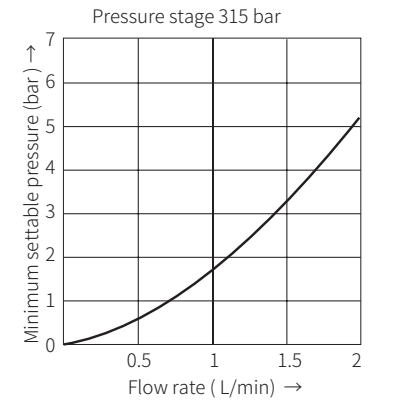
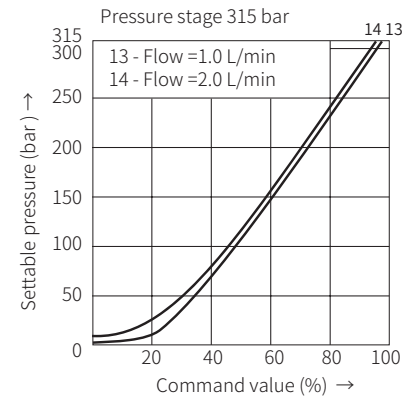
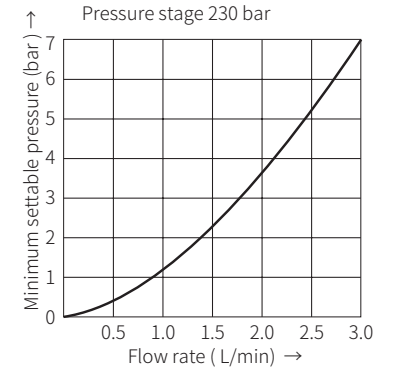
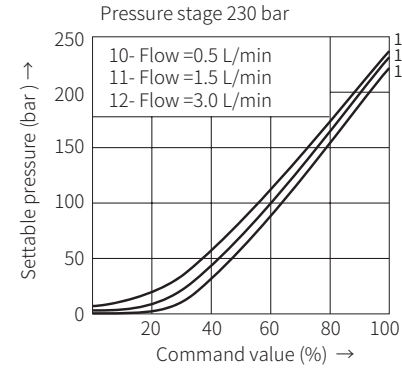
Characteristic curve

(Measured when using HLP46, $\vartheta_{oil} = 40^{\circ}\text{C} \pm 5^{\circ}\text{C}$)



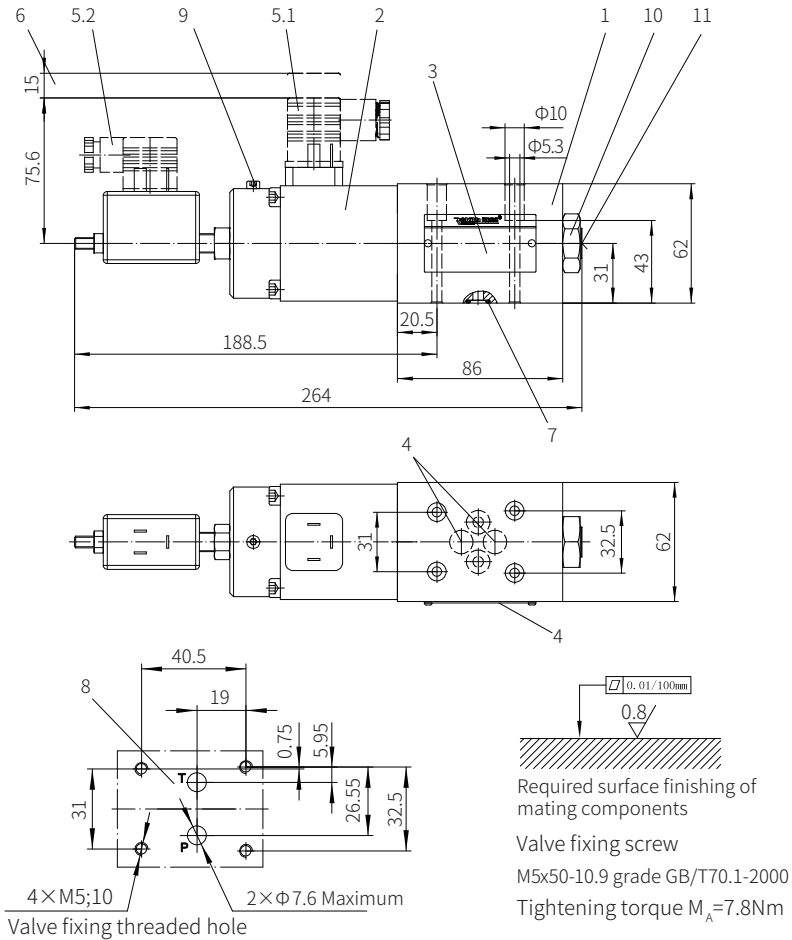
Characteristic curve

(Measured when using HLP46, $\vartheta_{oil} = 40^{\circ}\text{C} \pm 5^{\circ}\text{C}$)



Component size

Size unit: mm



- 1 Valve body
- 2 Proportional solenoid with inductive position transducer
- 3 Name plate
- 4 Blind hole
- 5 Plug-in connector
- 6 Space required to remove the plug-in connector
- 7 Identical seal rings for P, T and blind hole

- 8 Machined valve mounting surface
- Differences from the standard:
- Locating pin not present
 - A and B ports not drilled
 - 9 Bleed screw
 - 10 Lock nut SW27
 - 11 Internal hexagon SW8

Pilot Operated Proportional Relief Valve

Model: DBEM/DBEME...7XJ



- ◆ Size 10/25/32
- ◆ Maximum working pressure 350 bar
- ◆ Maximum working flow 700 L/min

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Features

- For subplate mounting
- For installation in manifolds
- Maximum pressure limitation
- Both valves and proportional amplifiers from the same supplier